



US – Algerian

Ministerial LNG Summit

USA, November 7th 2002



Algerian Gas Industry

Prospects for LNG Exports to the US

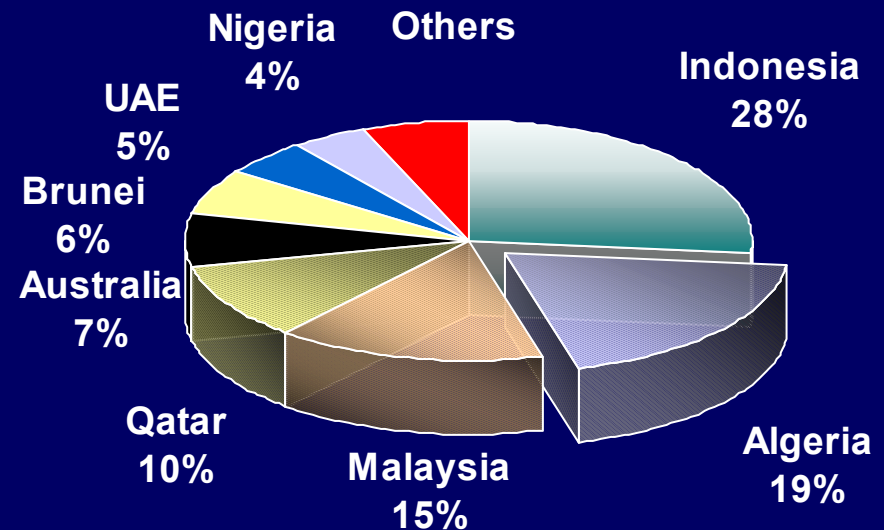
SONATRACH



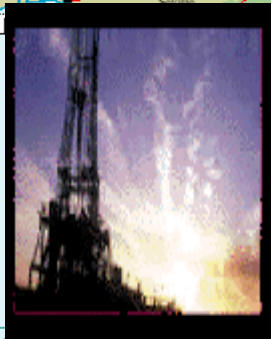
Sonatrach Today



- **12th Largest Oil & Gas Company**
- **3rd Largest Gas Exporter**
- **2nd Largest LNG Exporter**



✓ **Sonatrach, a reliable supplier of LNG, a clean fuel.**



Proven gas reserves of 4500 Bcm (159 Tcf)

Gas Production of 140 Bcm/y (4.9 Tcf/y or 14 Bcf/d)



11 gas lines covering 7300 Km



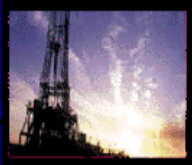
4 LNG plants with total capacity of 51 Million LNG m³ equiv. to 30.5 Bcm/y (1.1 Tcf/y)



LNG Fleet of 06 Vessels (Total Capacity of 674,000 LNG m³)



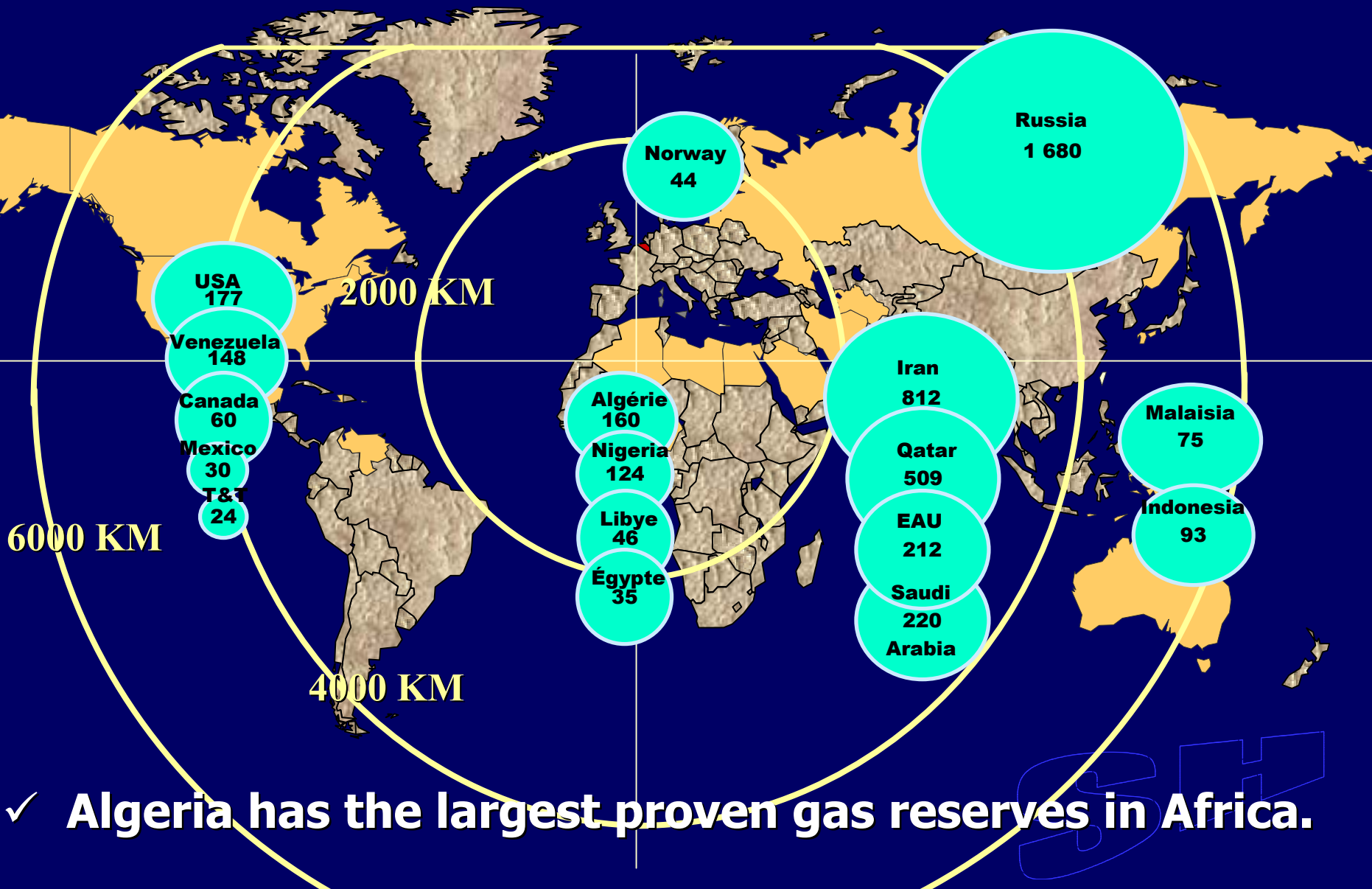
A market of 2.8 Tcf/y (Domestic : 0.6 Tcf/y & Exports: 2.2Tcf/y)



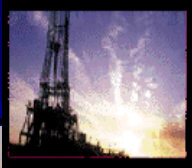
Worldwide Gas Reserves

Unit : Tcf

Upstream

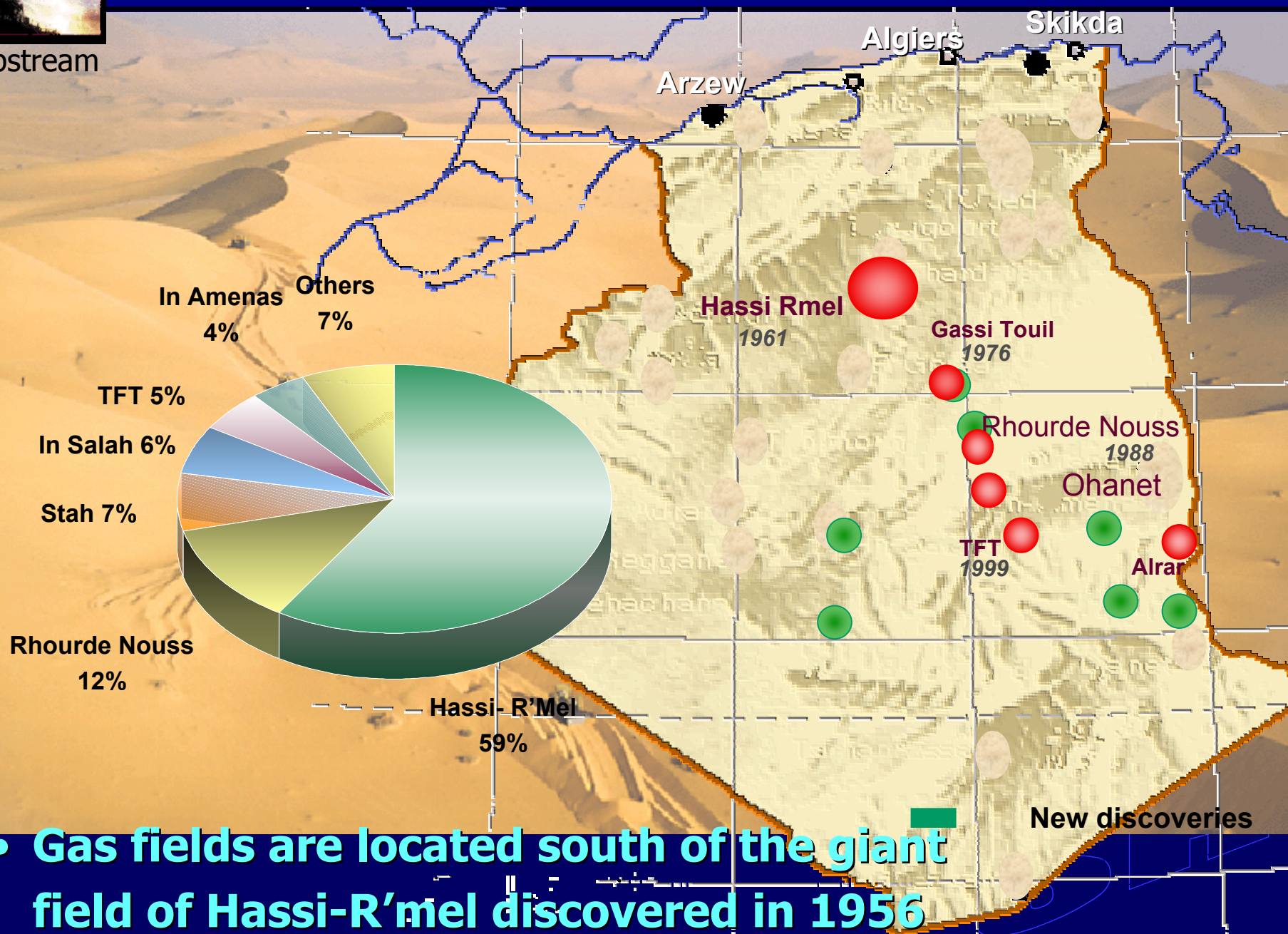


✓ **Algeria has the largest proven gas reserves in Africa.**

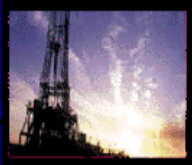


Upstream

Gas Fields

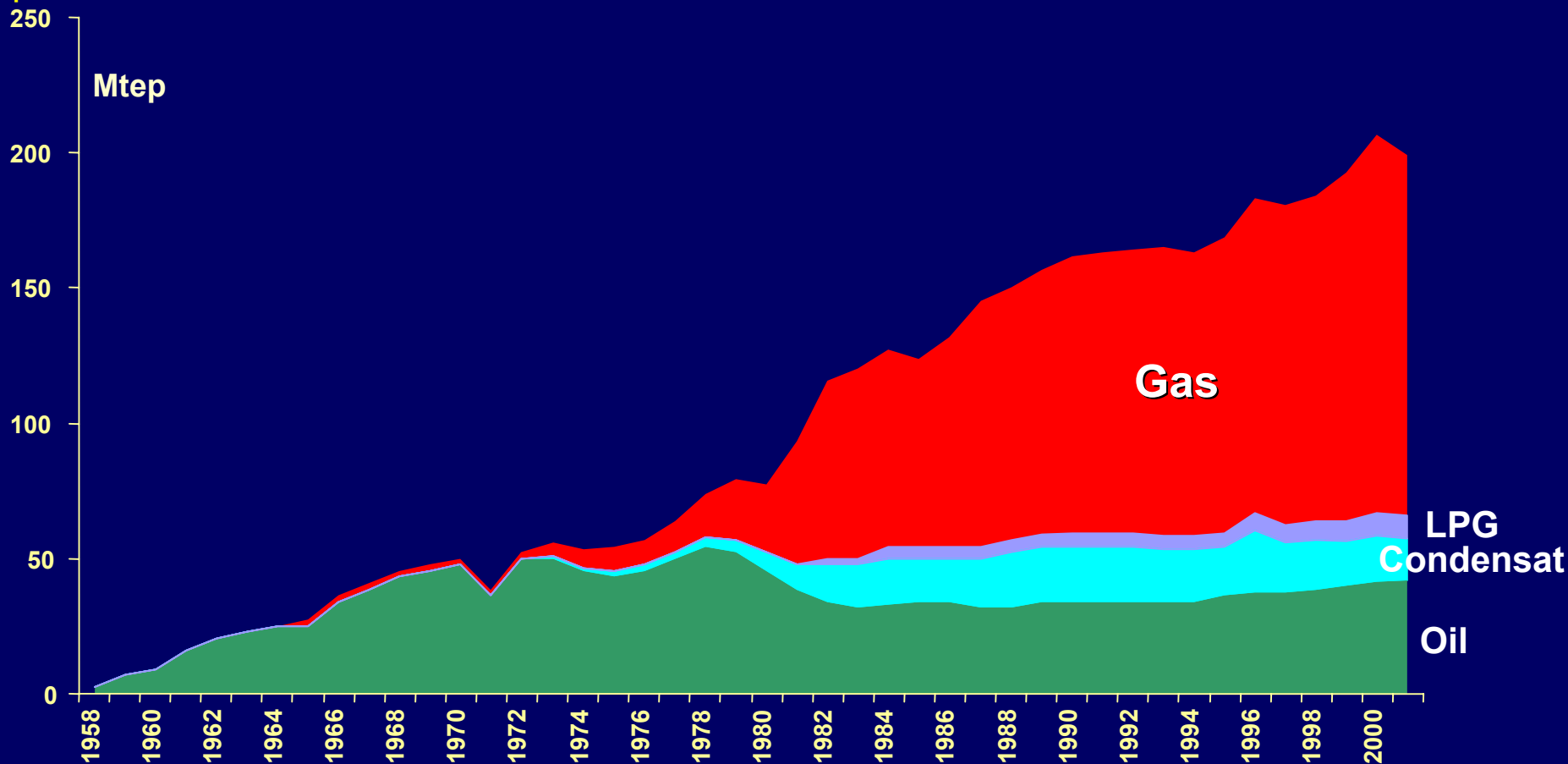


- Gas fields are located south of the giant field of Hassi-R'mel discovered in 1956



Production

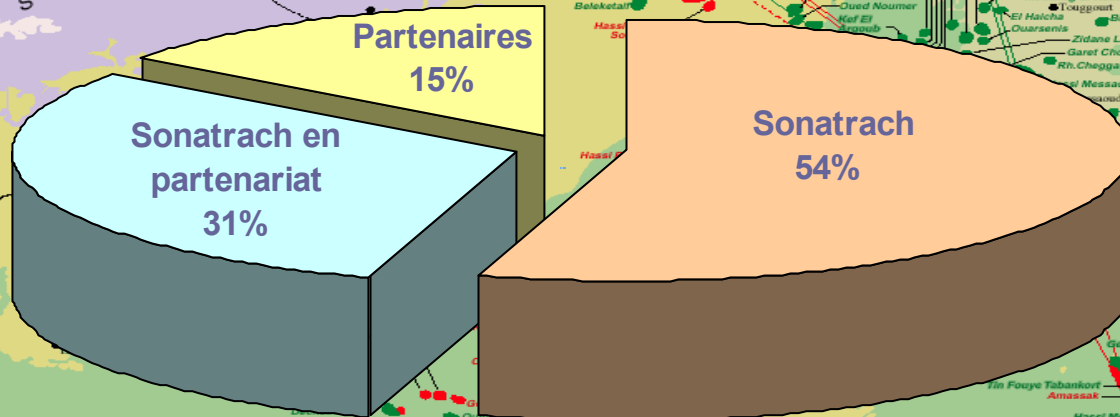
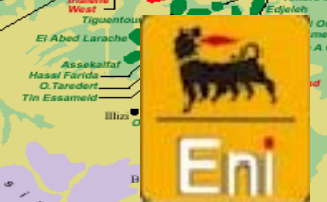
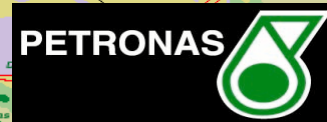
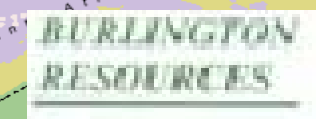
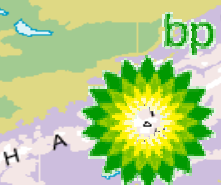
Upstream



- Natural gas share in the total hydrocarbon production increased from 32% in 1980 to 67% in 2001.
- 70% of the gas is produced by Hassi R'Mel field.

Partnership Business

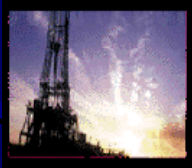
Upstream



Total Investments 2001-2005:

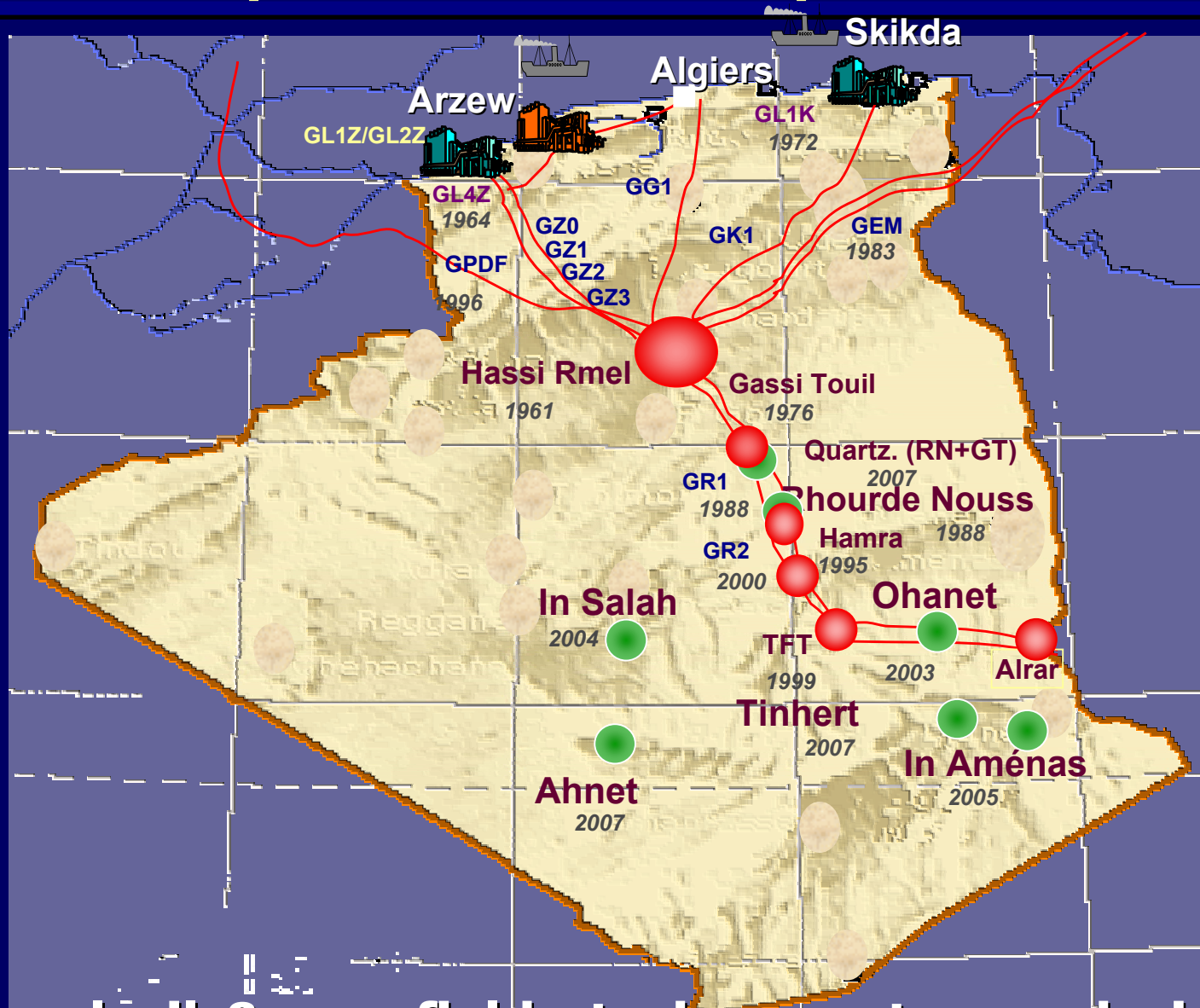
20.6 10⁶ US \$

- 45% of the investment of the development program will be undertaken with foreign partners.

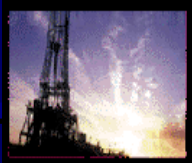


Upstream Gas Development

Upstream



✓ Several oil & gas fields to be on stream during this decade.



New Hydrocarbon Law

Upstream

Today

Sonatrach

**Ministry of Energy
& Mines**

**Foreign
Companies**

Market: Exports

Joint marketing

Tomorrow

Alnaft

Regulator

**Ministry of Energy
& Mines**

Sonatrach

**Foreign
Companies**

Markets: Local+ Exports

Joint Marketing

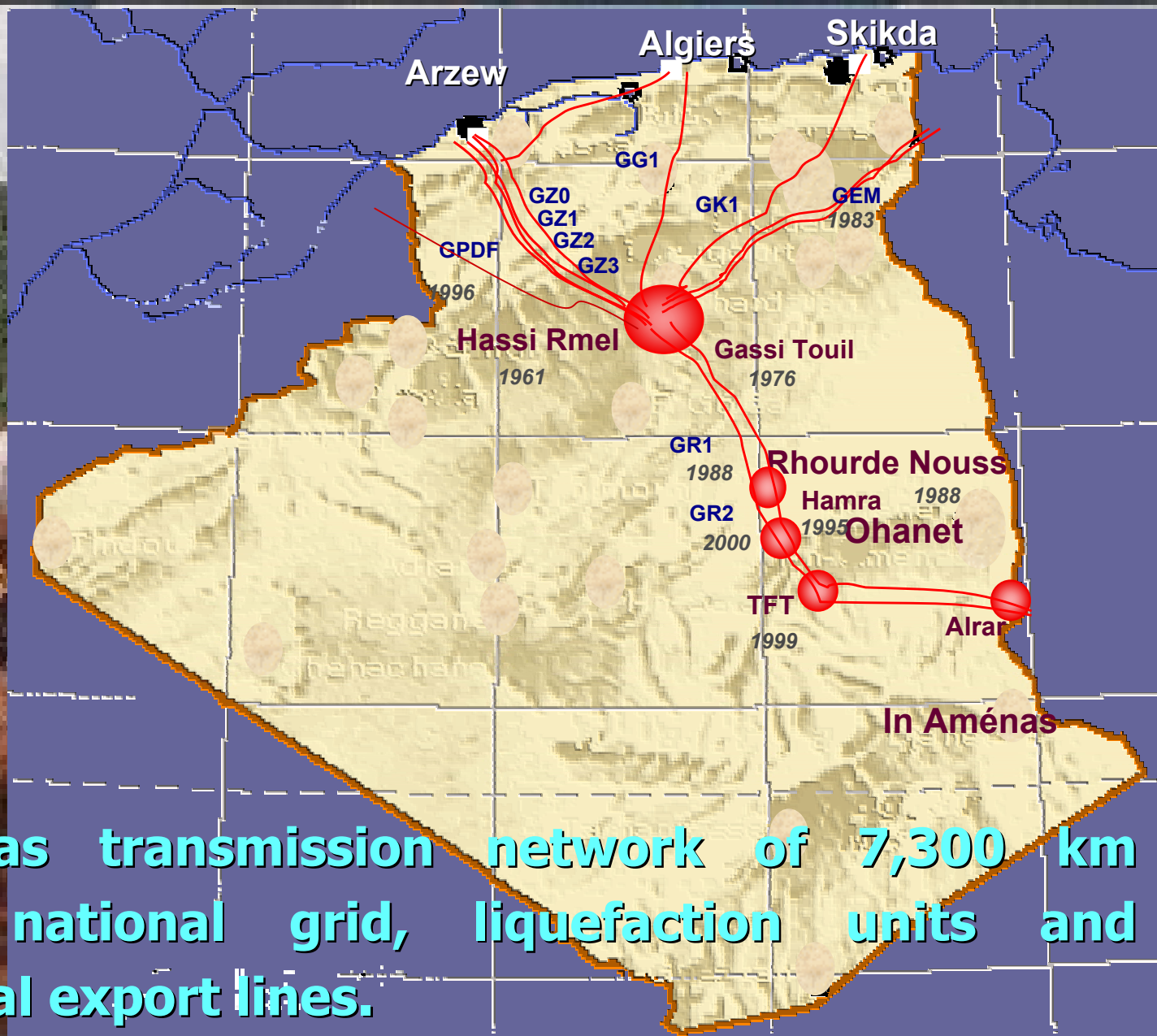
- **Agencies to establish and monitor rules and hydrocarbon legislations to attract private investments.**

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Transportation Network...

Transportation

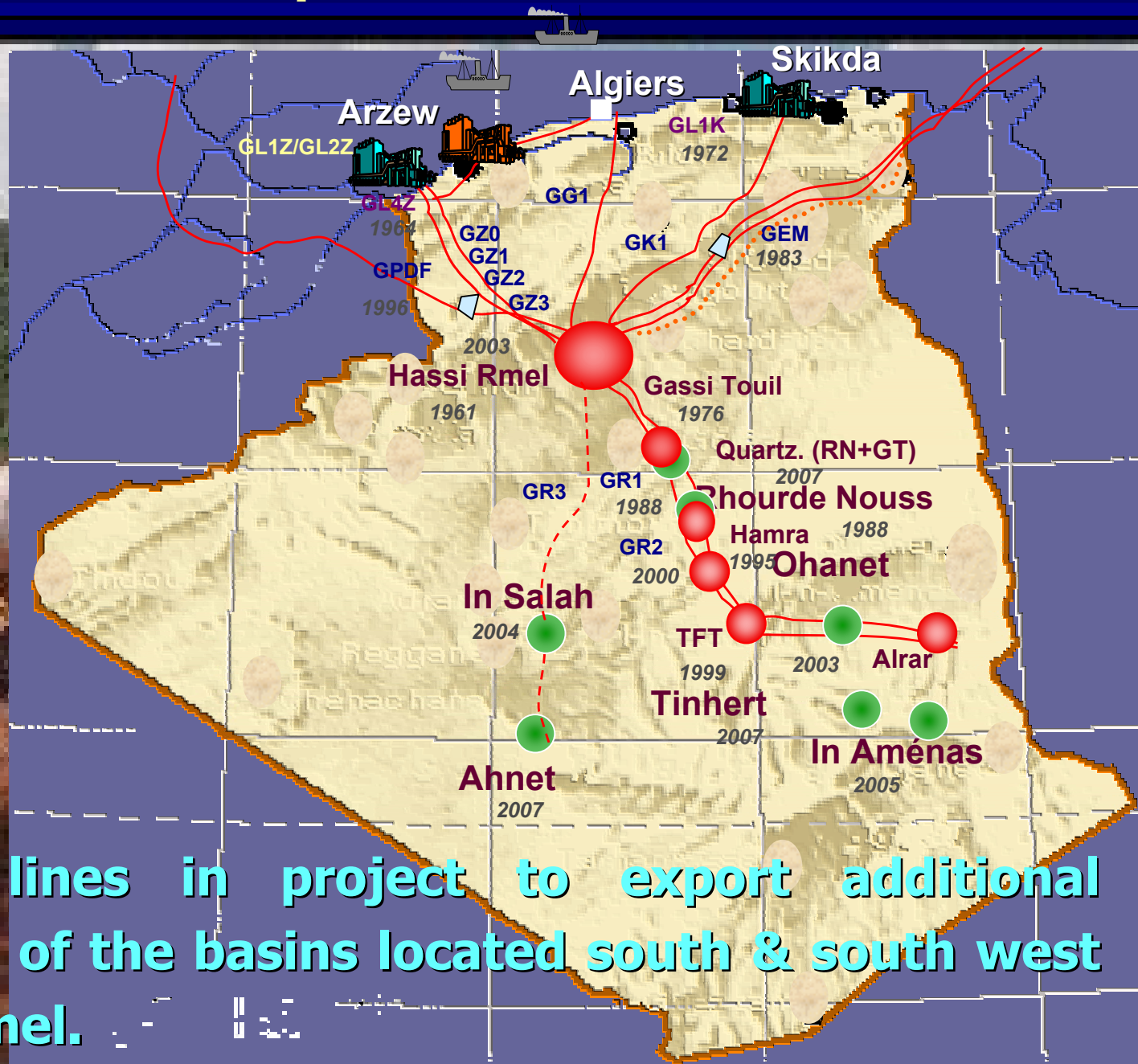


- A wide gas transmission network of 7,300 km supplying national grid, liquefaction units and international export lines.



Transportation

Transportation Network



- New gas lines in project to export additional production of the basins located south & south west of Hassi R'mel.

Liquefaction Plants ...

Liquefaction

GL4Z : Camel



- Start Up : 1964
- 1.7 Billion M³ GAS
- 03 Trains
- Cascade Process
- 03 Tanks (11 000 M³)

Camel, the plant that started international LNG Trade in 1964

Liquefaction plants



Liquefaction



GL1K : Skikda



GL1Z : Bethioua 1



GL2Z : Bethioua 2

- Start Up : 1972
- 7.8 Billion M³ GAS
- 06 Trains
- Teal & Prico Process
- 05 Tanks (308 000 M³)

- Start Up : 1978
- 10.5 Billion M³ GAS
- 06 Trains
- Air Product Process
- 03 Tanks (300 000 M³)

- Start Up : 1981
- 10.5 Billion M³ GAS
- 06 Trains
- Air Product Process
- 03 Tanks (300 000 M³)



✓ **Decades of expertise and reliability**



LNG Fleet



Hassi R'Mel



Larbi Ben M'Hidi



Bachir Chihani

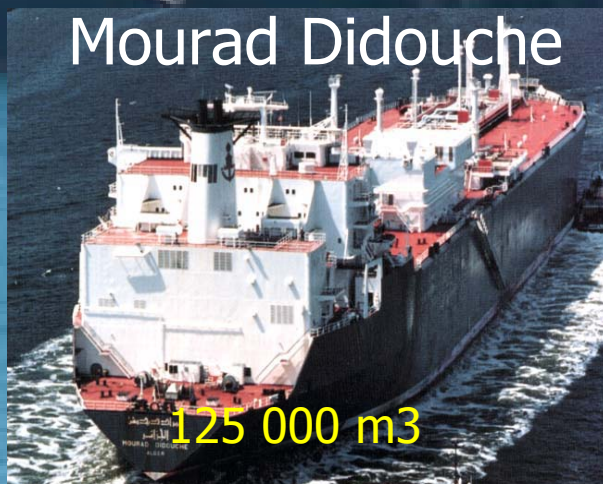


- **SNTM HYPROC, a Company fully owned by Sonatrach is operating six LNG vessels, most of them under T.C dedicated to L.T Purchase & Sale Agreement.**

Mostefa Ben Boulaid



Mourad Didouche



Abane Ramdane

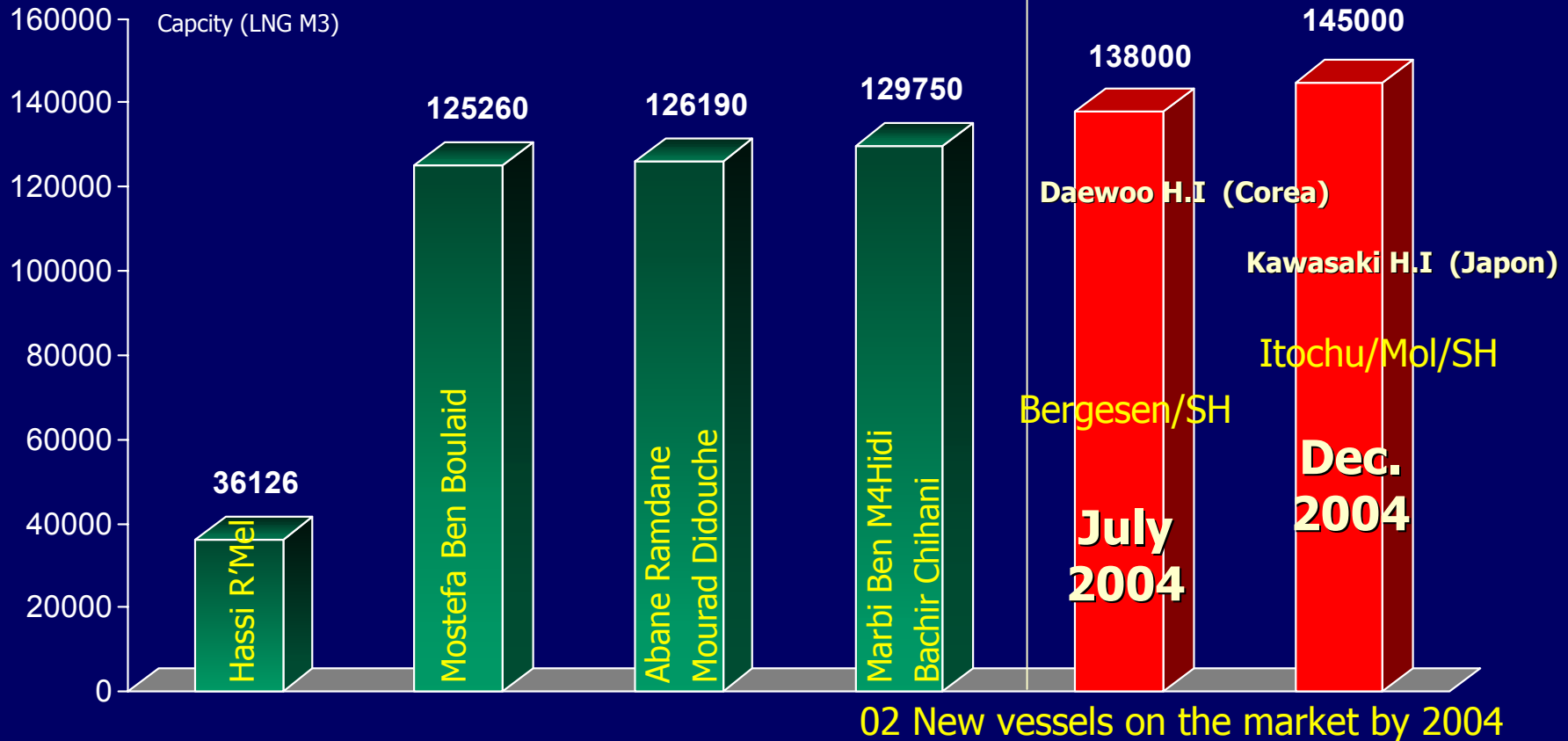




Acquisition of 02 Vessels in Partnership

Shipping

Total Capacity :
957 000 LNG M³



- Two new ships are being built and will be operated by JV companies.

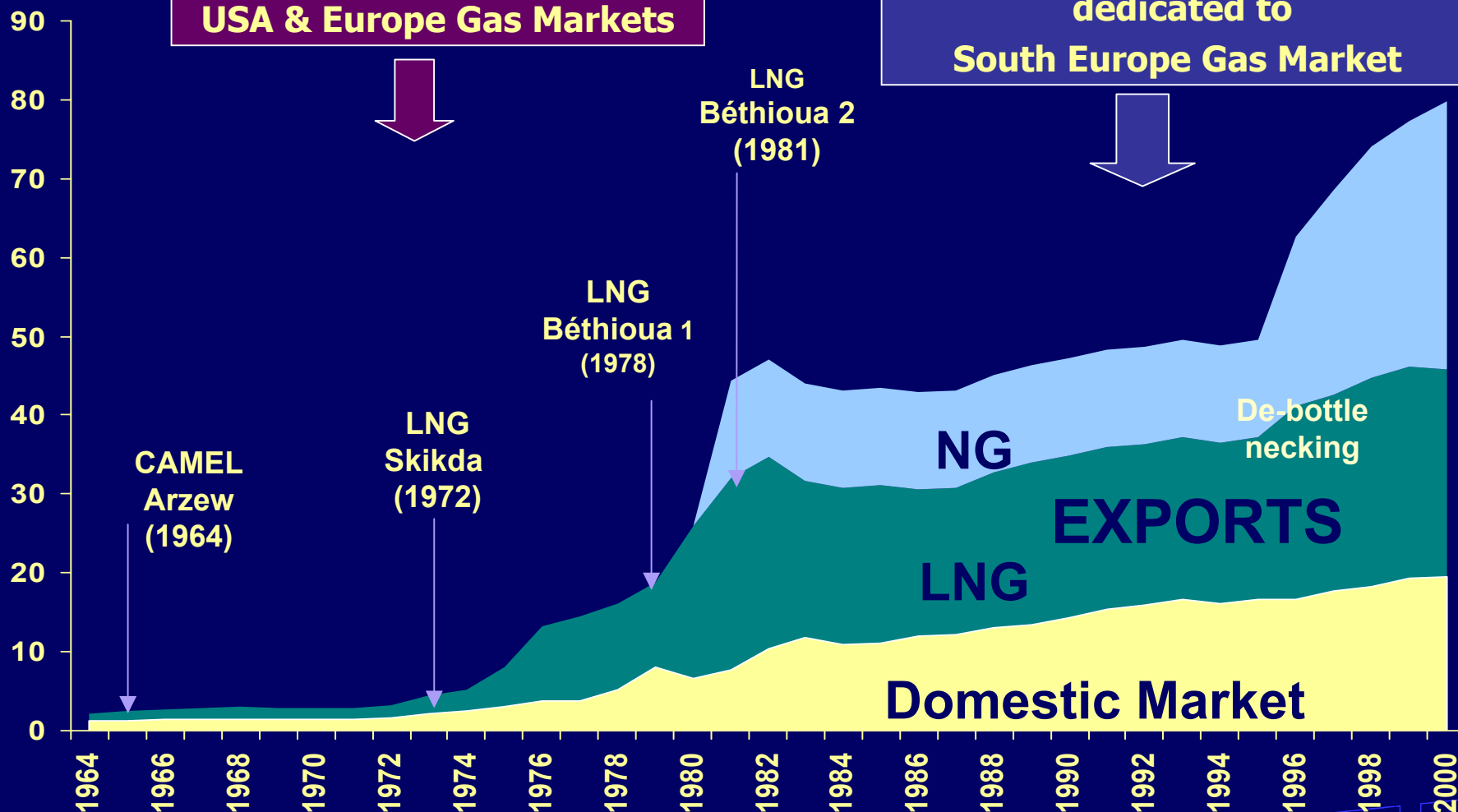


Marketed Gas

Marketing

**70's : LNG Chains
dedicated to
USA & Europe Gas Markets**

**80's & 90's : Gas Chains
dedicated to
South Europe Gas Market**



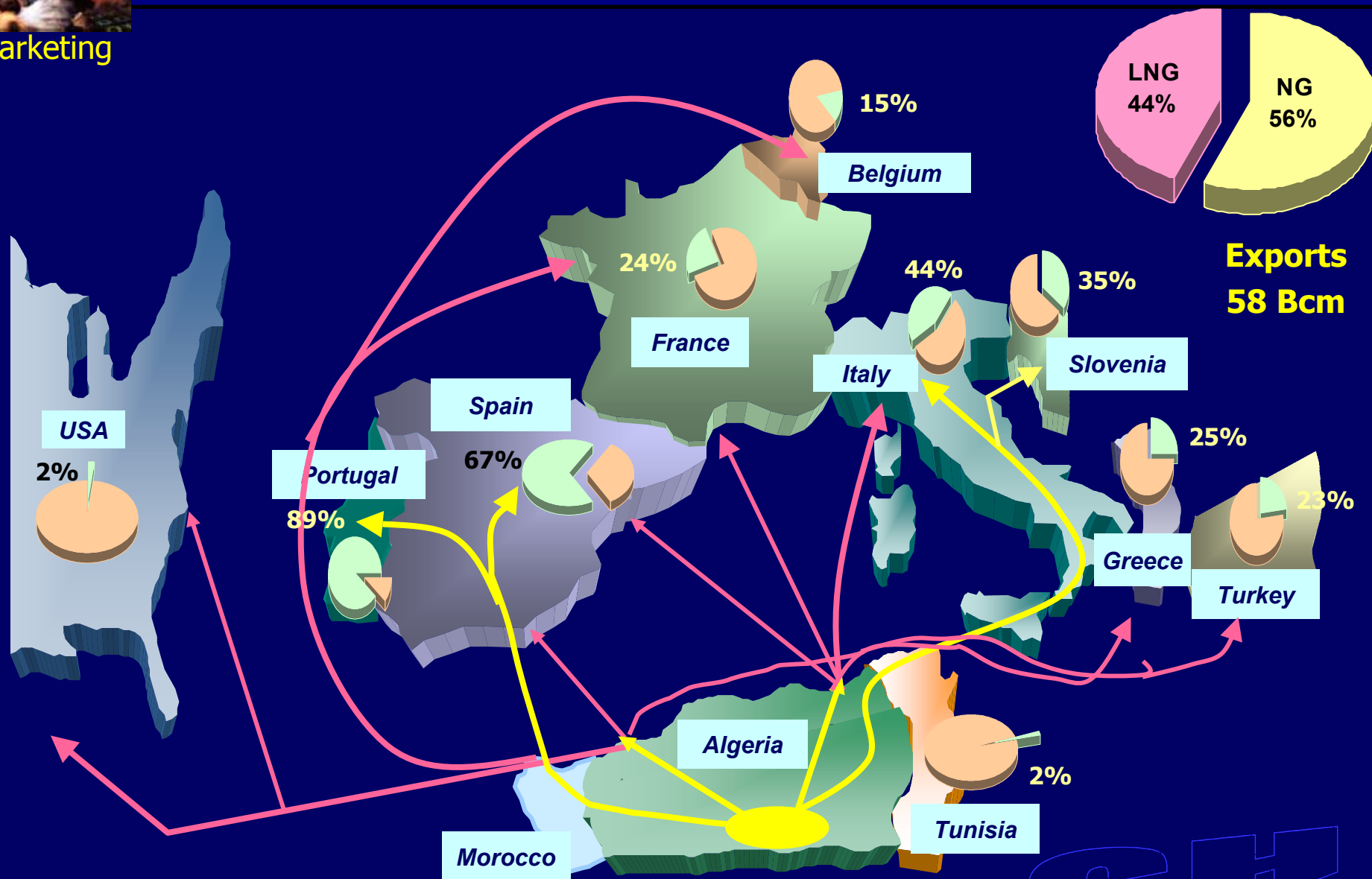
- **7%/year growth since 1990**

- **Balance between pipeline gas and LNG exports**



Marketing

Gas Exports in 2001



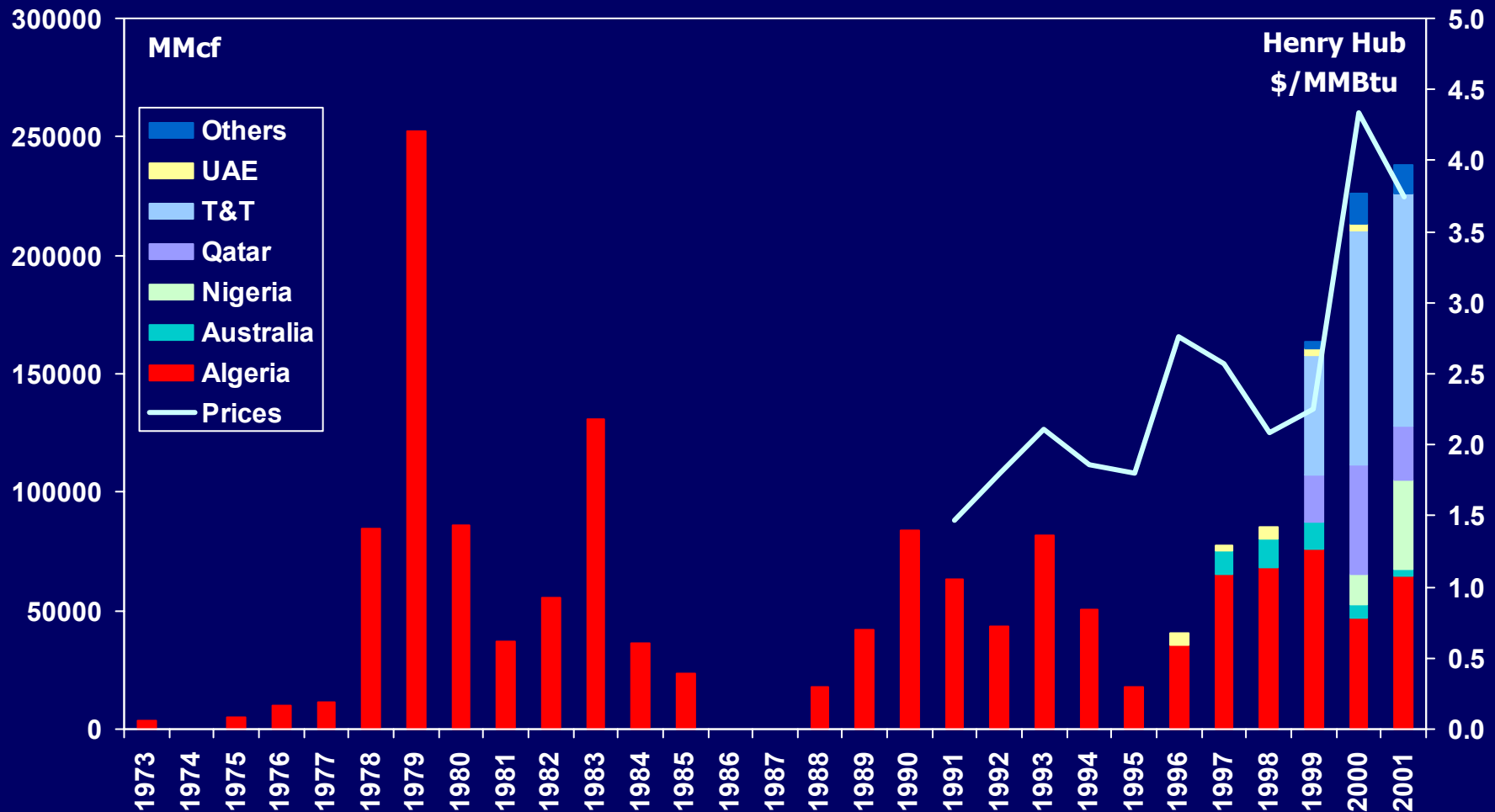
- Most Gas Sales committed on long term

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LNG Market Share in the US

Marketing



✓ **Sonatrach has been the major LNG supplier to the US for decades.**

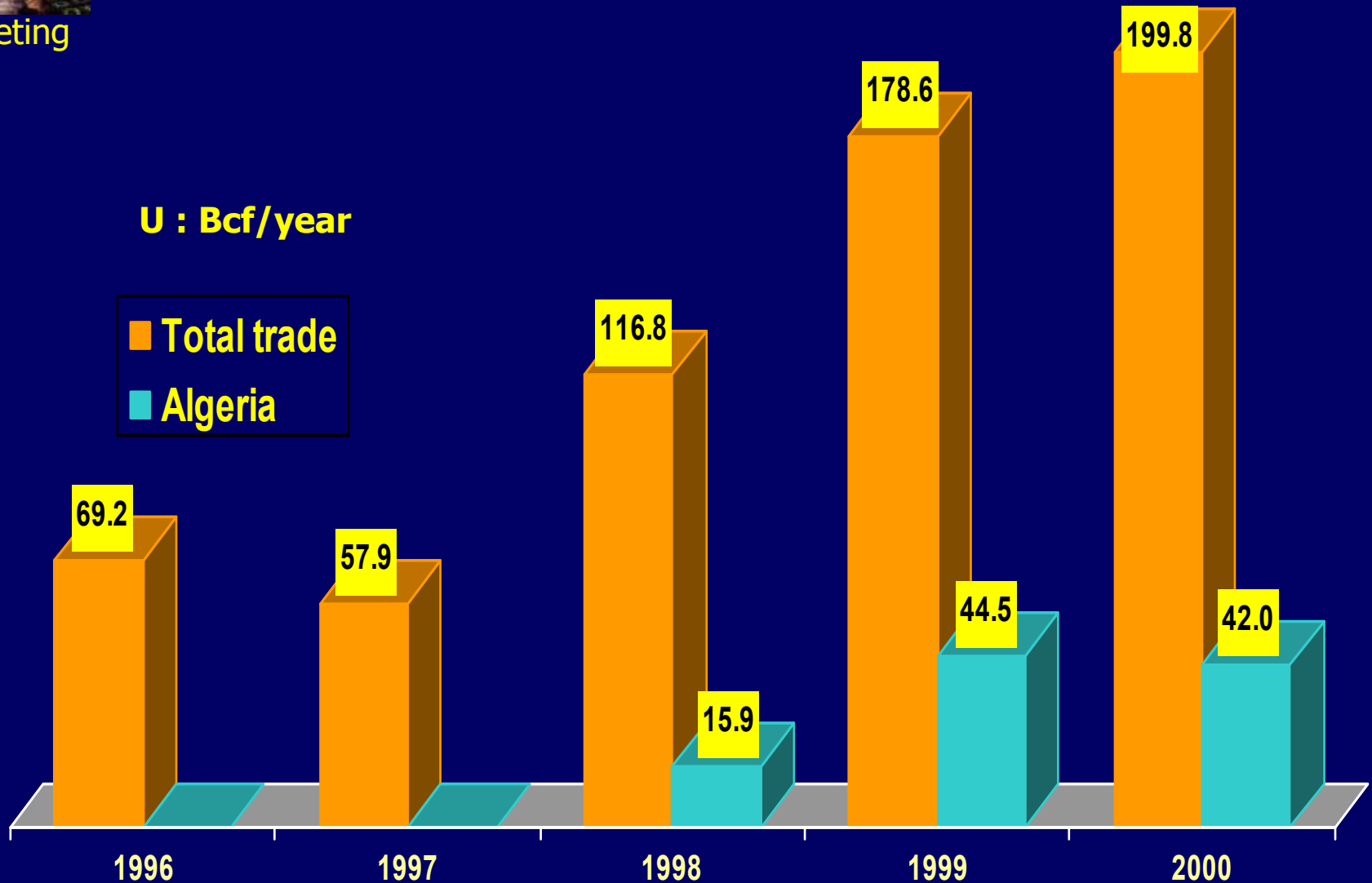


LNG Spot Transactions

Marketing

U : Bcf/year

■ Total trade
■ Algeria



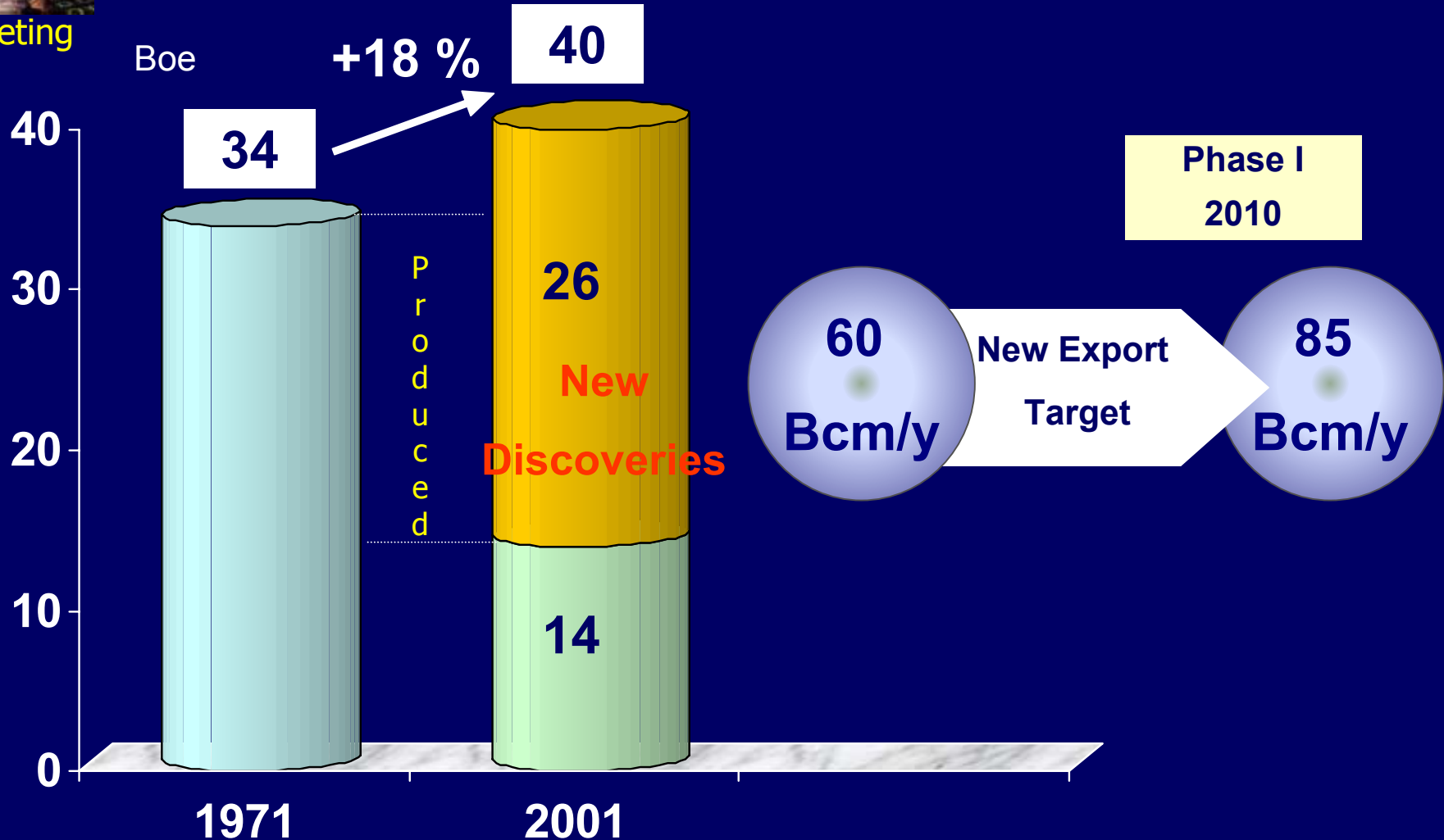
- LNG excess capacity sold in spot markets in Europe and US.

SE



New Target For Gas Exports

Marketing

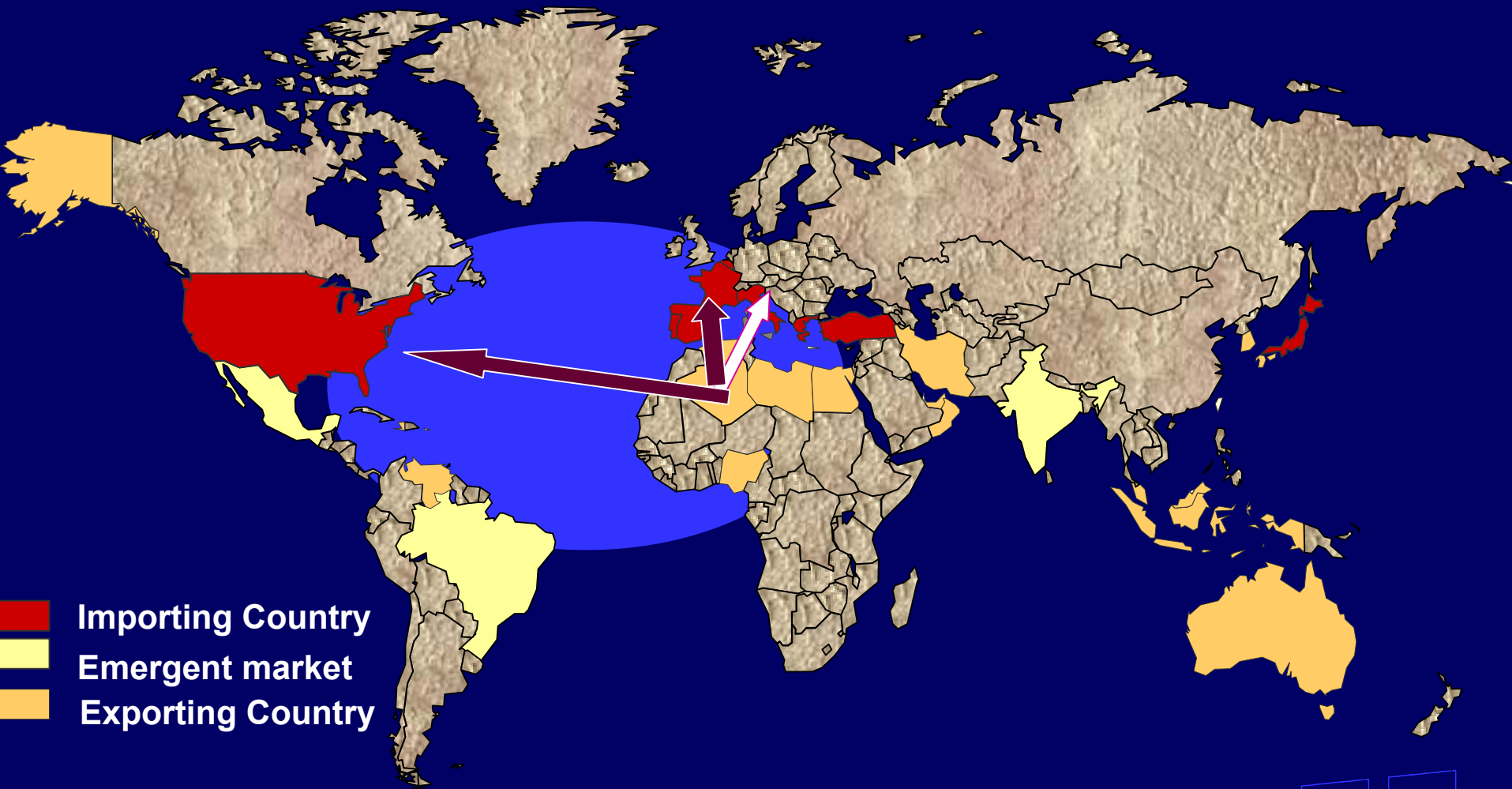


- ✓ Algeria, which has renewed and increased its proven hydrocarbon reserves during 1971-2001 period, targets to export 85 bcm/y by 2010.



Identified Markets : the « Atlantico-Mediterranean basin »

Marketing



- **Algeria will use its NG/LNG flexibility to reach mature and emergent gas markets**

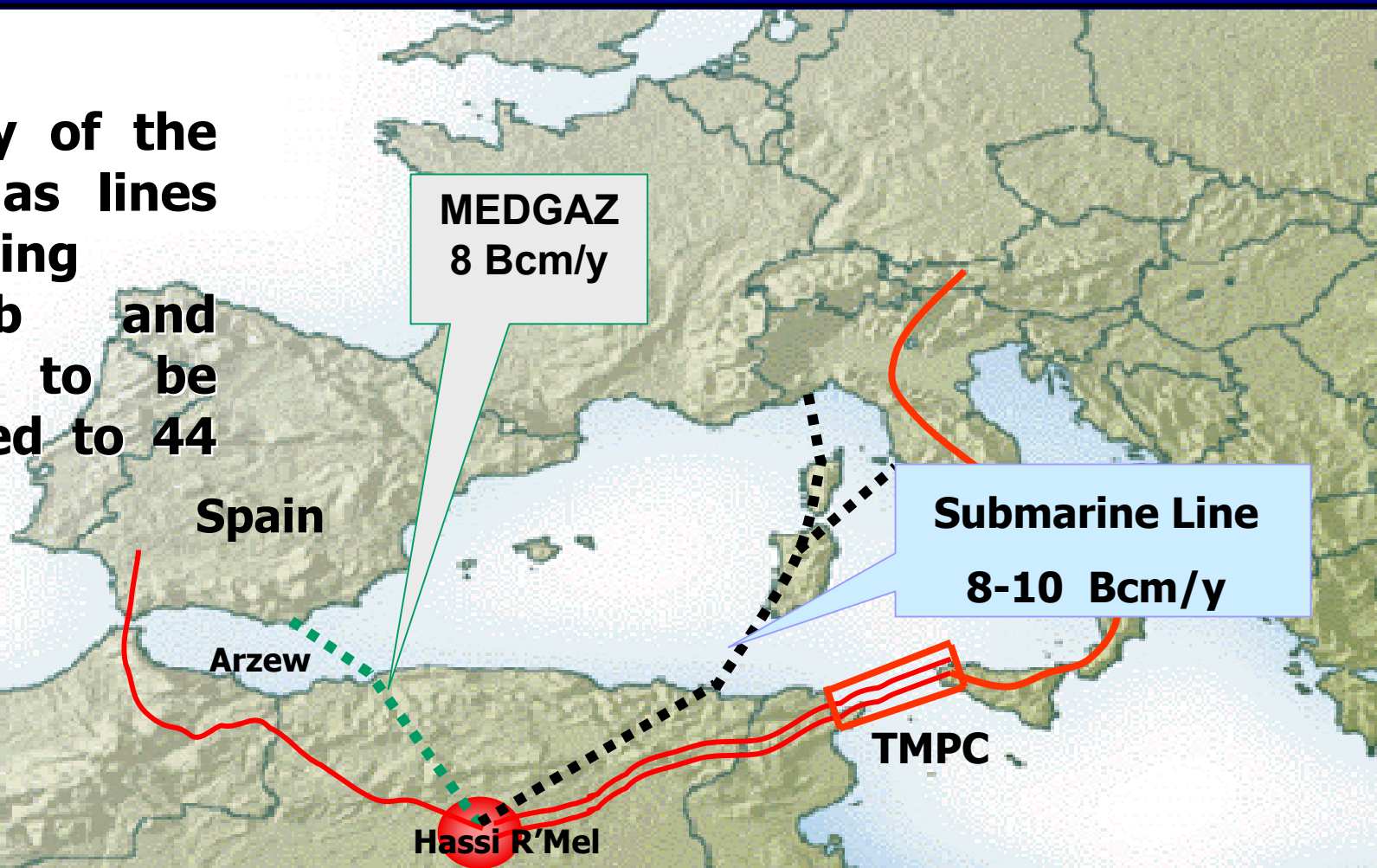
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Through New & Existing Routes..

Marketing

- Capacity of the two gas lines connecting Maghreb and Europe to be increased to 44 Bcm/y.



- Use of deep water technology to develop new direct routes and secure access to European markets at competitive costs.



New Projects To Supply South of Europe



Medgaz Project

Corridor : Beni Saf – Almeria
Length: 200 km
Max Depth: 2160 m
Capacity: 8 Bcm/y

Sardinia Project

Corridor : El Kala –
Casteglionne Della Pescaia
Length: 350 km
Max Depth : 1800 m
Capacity : 8 à 10 Bcm/y



A New LNG Train ...

Marketing



0 0.5 1.0 km (approx.)

- A new Train of 4 to 5 MT/y in the Arzew industrial zone

1.7 Billion M³ GAS

10.5 Billion M³ GAS

10.5 Billion M³ GAS

LNG Project

Capacity : 4/5 Mt/year



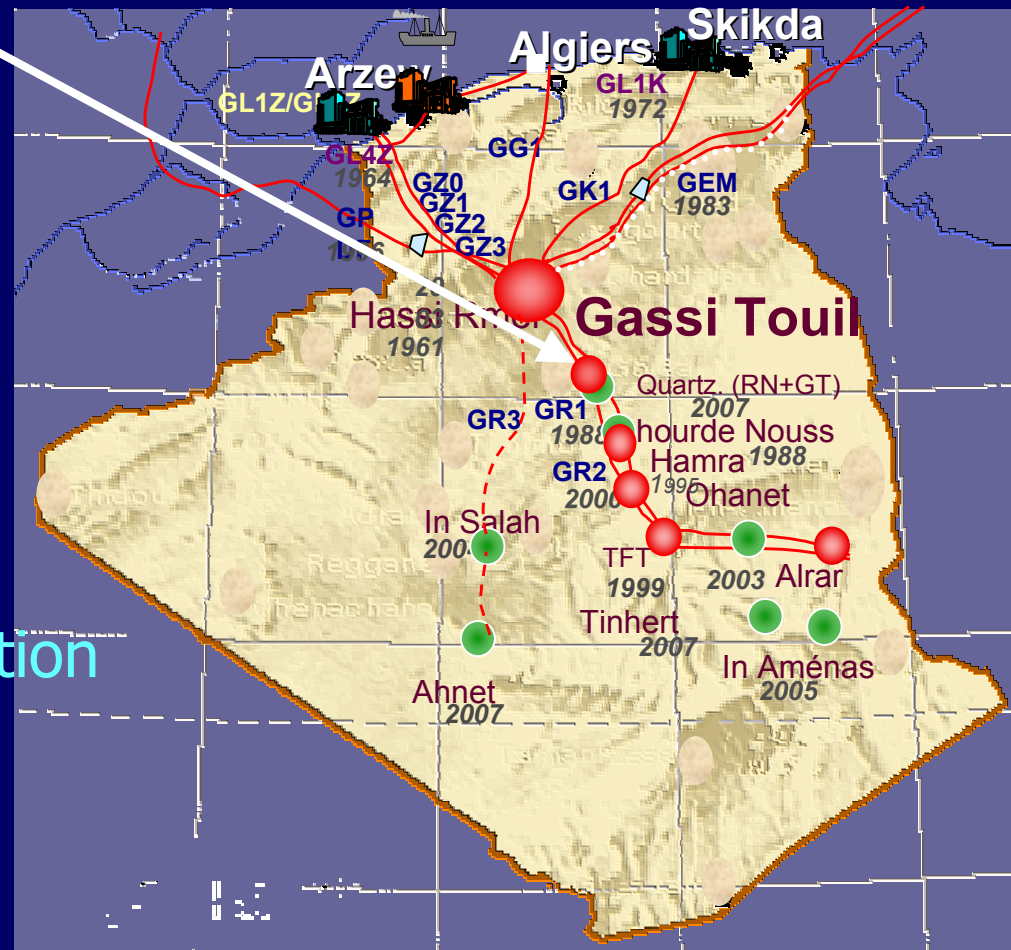


To be part of the Gassi Touil Integrated Gas Project

Marketing

Integrated gas project scope

- To extend existing plant
- To built LPG plant
- To built CO2 remover plant
- To participate to transportation
- To built LNG plant
- To market LNG

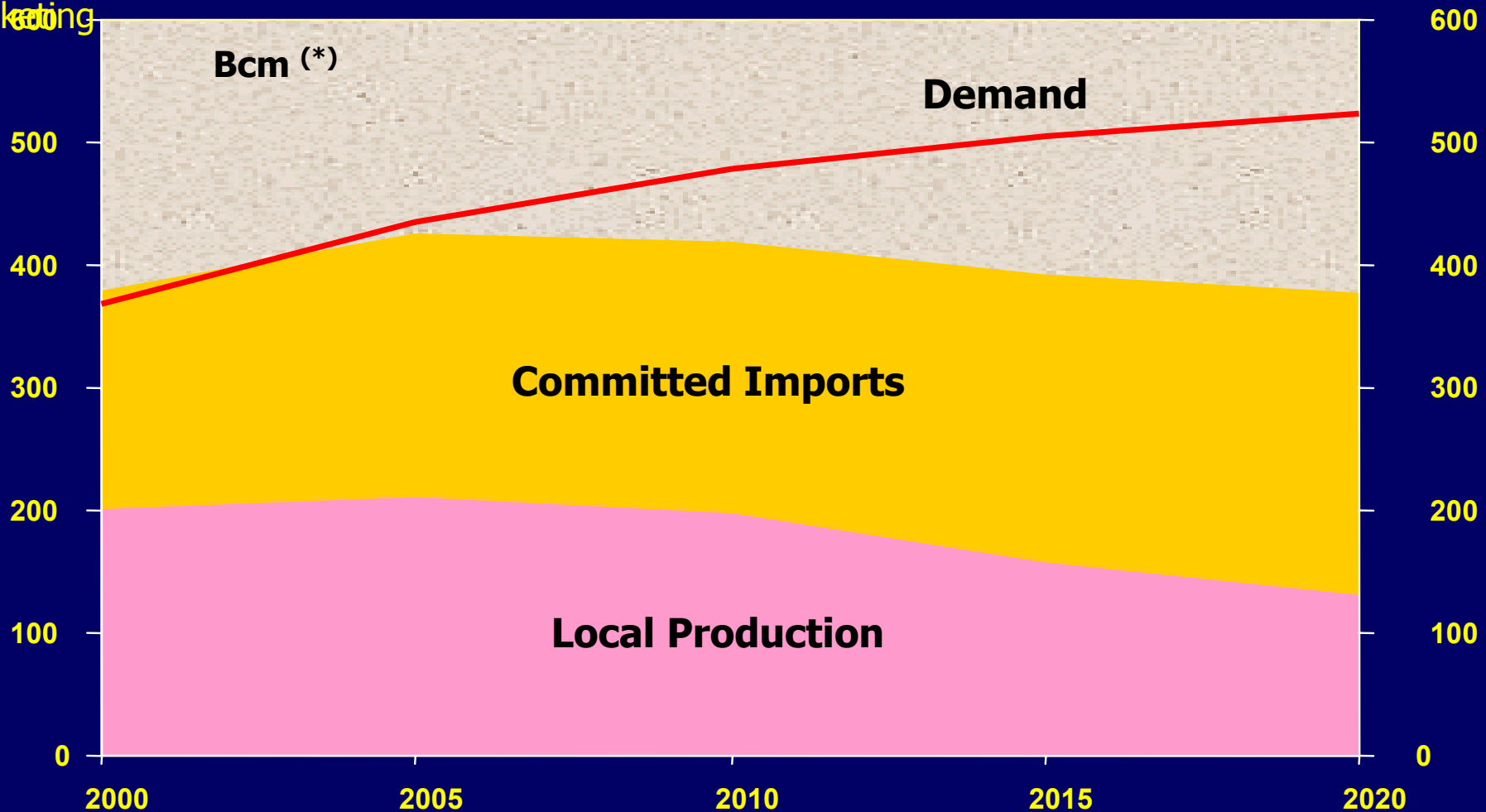


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Significant Opportunity for NG/LNG in Europe

Marketing



(**) Scenario related to the UE Security of supply
DG TREN, november 2000

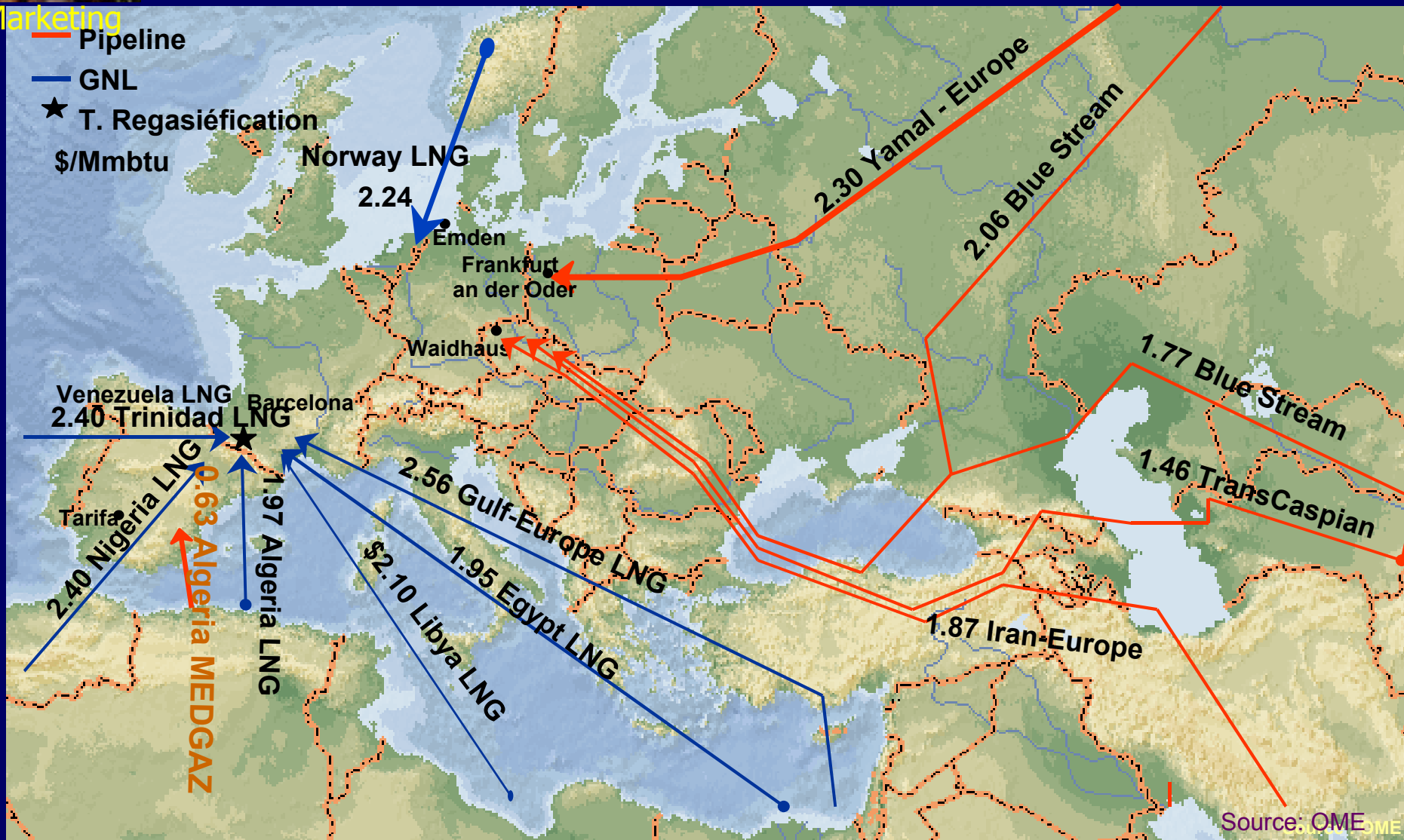
Source : OME - EUROGAS Rapport Annuel 2000

- Algeria will meet part of the European gas demand, mainly driven by new CCGT projects



Sonatrach NG/LNG Flexibility in Europe

Marketing



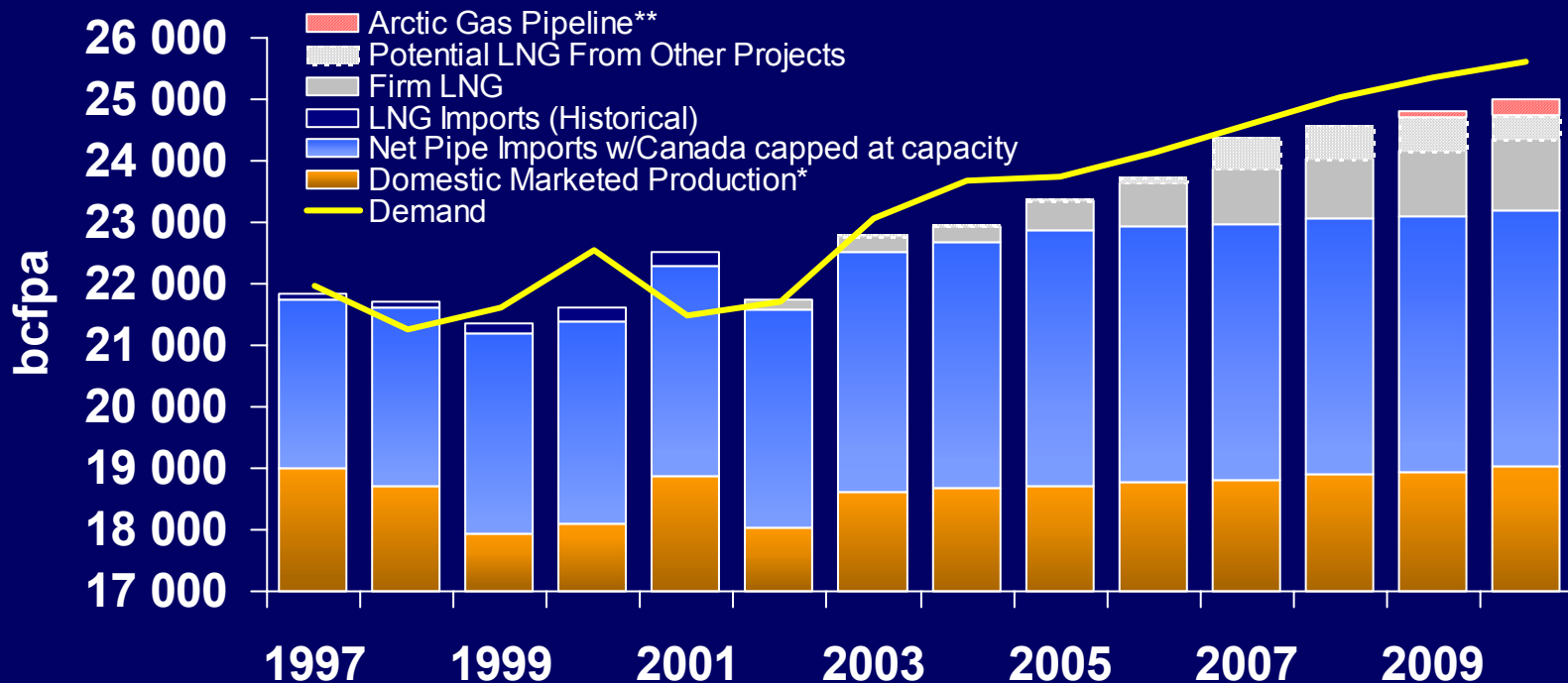
- Sonatrach will be able to supply Europe with reliable gas infrastructures at competitive conditions.



Significant Opportunity for LNG in the U.S.

Marketing

U.S. Demand, Domestic Production & Net Pipeline Imports



*Includes Balancing Item

**Assumes a 1 bcfpd pipeline to the U.S. Lower 48 starting 2009, running at 33% capacity in 2009 and 66% capacity in 2010

- There is a potential demand for additional LNG imports in the US starting 2004.

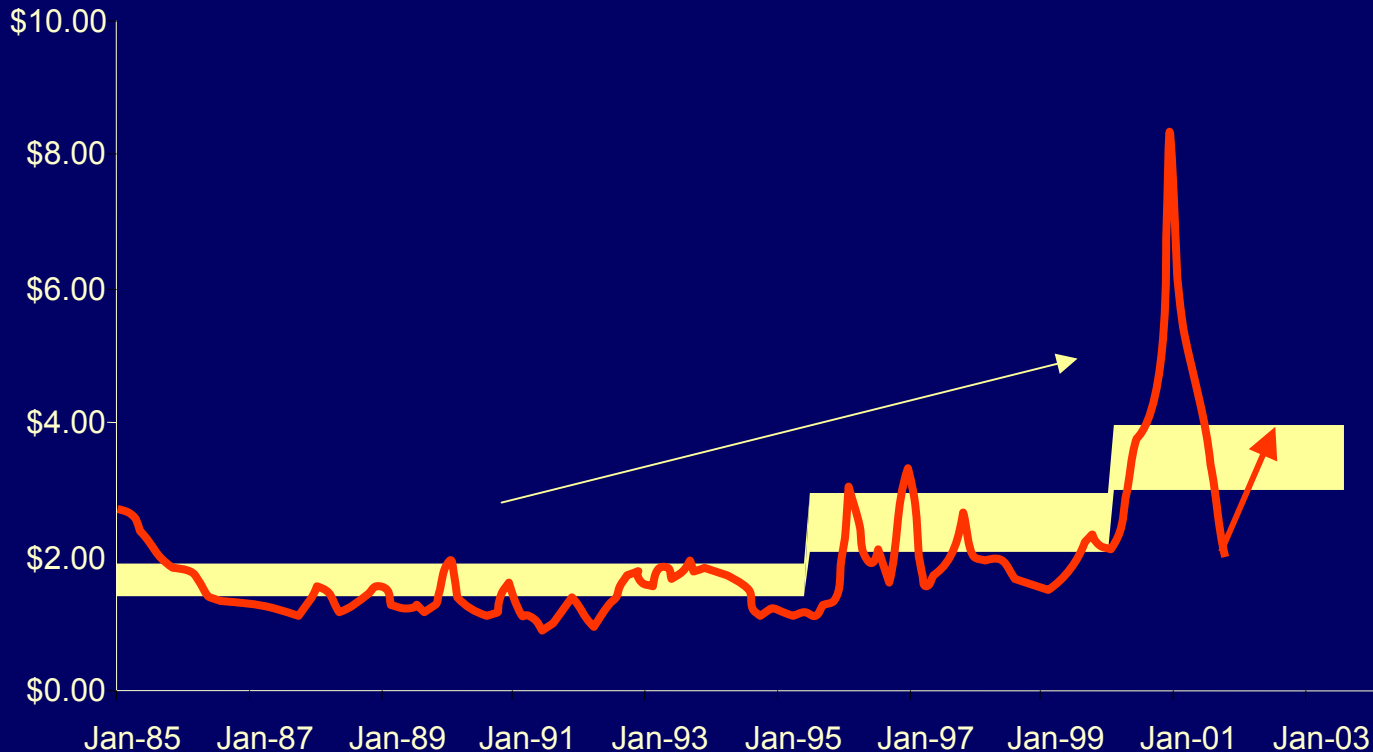
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Source : PFC



Historical US Gas Price

Marketing



Prices:

1. Price Increase will encourage development of new LNG chain
2. Futures will help to manage price volatility

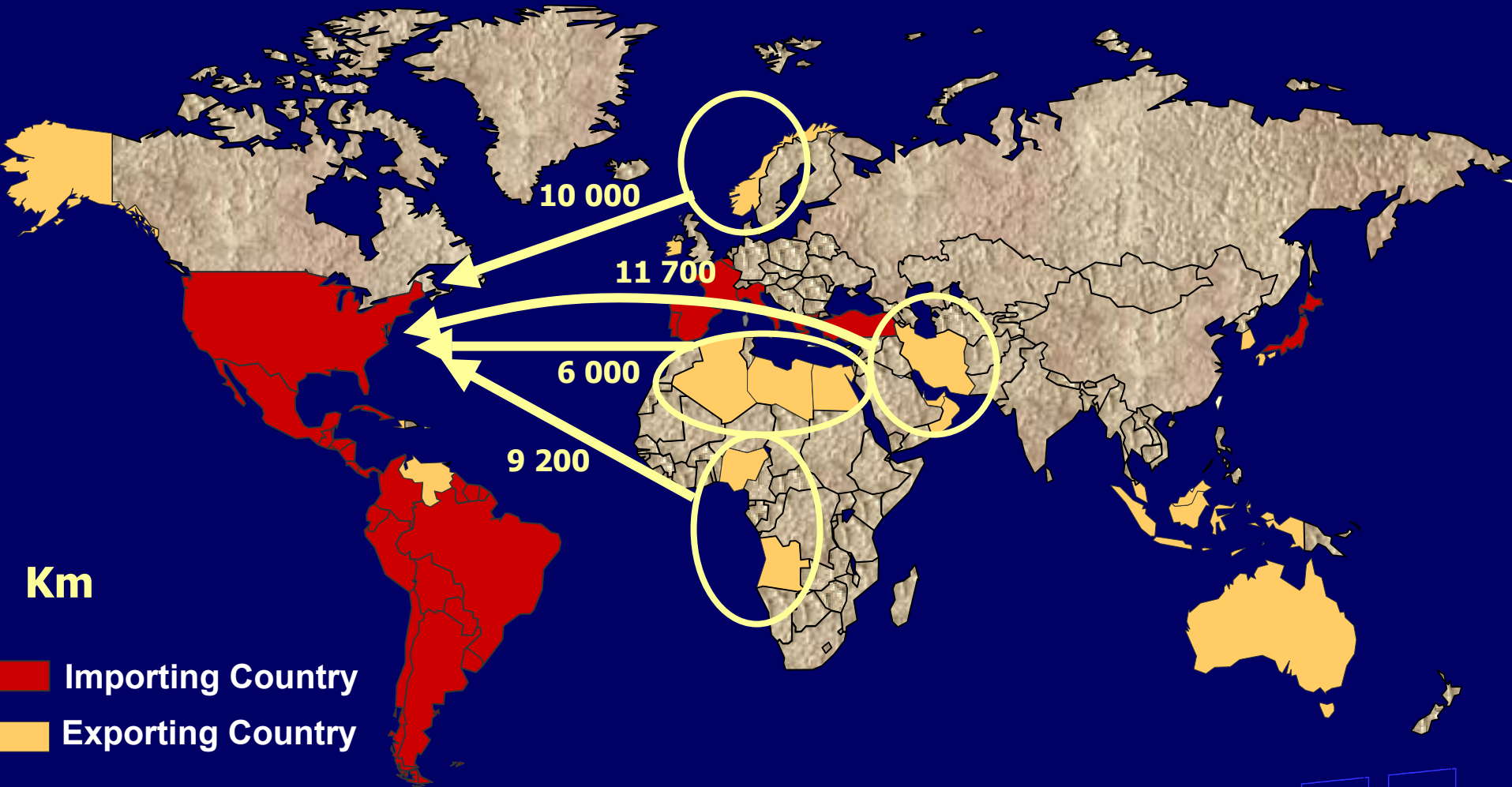
Gas Market:

1. Transparent and liquid market
2. Future contracts
3. Ready Gas Market
4. Limited LNG Access



American Gas Market Supply

Marketing

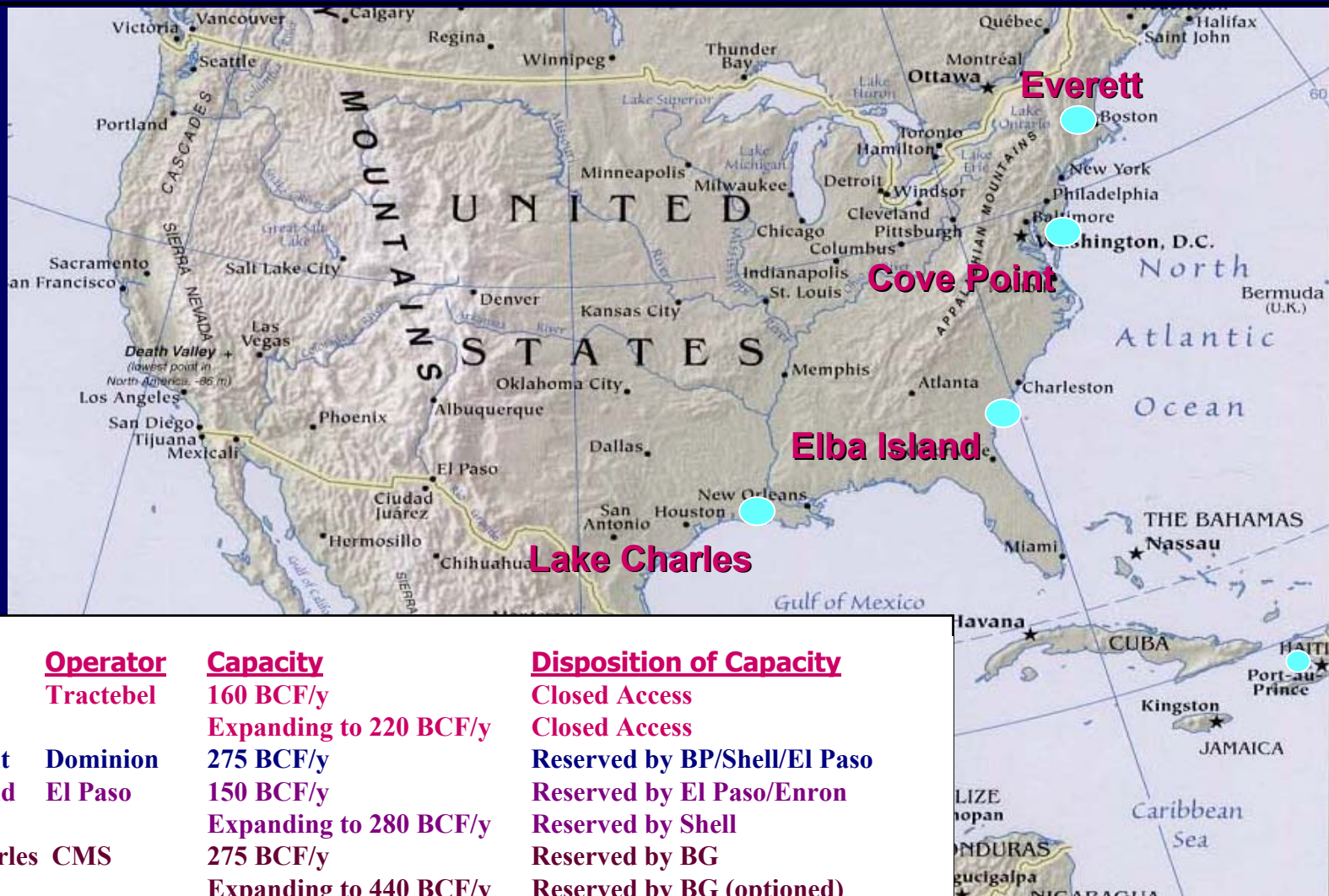


✓ **Algeria is the closest source of gas to the American market**

Access to the US Gas Market : a major constraint



Marketing



- Existing receiving terminals are private or fully reserved.

Some History



Marketing

Exhibit 1 - Federal Power Commission Long-Term LNG Import Applications
July 30, 1976

<u>Source</u>	<u>Importer</u>	<u>Delivery Point</u>	<u>Deliveries</u>		<u>Time Frame</u>		<u>Notes</u>
			<u>Mcf/day</u>	<u>Bcf/yr</u>	<u>Start</u>	<u>Years</u>	
Skikda, Algeria	Distrigas Corp.	Everett, Mass. & Staten Is., N.Y.	42	15	1971	20	Approved and Reopened
Arzew, Algeria	Columbia LNG, Consolidated Gas Supply, Southern Energy Co.	Cove Point, Md.	319	116	1976-77	25	Approved and Reopened
		Cove Point, Md.	372	136			
		Savannah, Ga.	372	136			
Skikda, Algeria	Easco Gas LNG Inc.	Staten Is., N.Y. & Providence, R.I.	326 ⁽¹⁾	119	1975-76	22	Partial Approval
Skikda, Algeria	Distrigas Corp.	Everett, Mass. & Staten Is., N.Y.	123	45	1975	20	Withdrawn
Arzew, Algeria	El Paso Eastern Transco Energy Southern Energy Consolidated System LNG Co.	Gloucester Co., N.J.	422	154	1978	25	Pending
		Gloucester Co., N.J.	422	154			
		Savannah, Ga.	112	41			
		Cove Point, Md.	169	62			
Arzew, Delys or Skikda, Algeria	Trunkline LNG	Lake Charles, La.	490	179	1979	20	Pending

✓ **Existing Receiving Terminals were built by US Companies to fulfill their Long Term Purchase Agreements with Algeria.**



Marketing

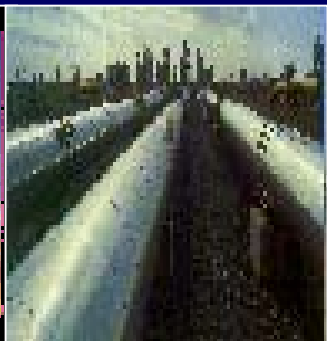
US Regulatory Constraints

- **The process approval for new terminals in the US is one of the biggest challenges for the development of a new LNG project.**
- **No new terminal has been approved since 20 years**
- **Existing U.S. terminals will not be able to handle expected demand for imported LNG**
- **Fear of U.S. approvals delays (historically 2 to 4 years) may cause developers to seek other alternatives.**

Integrated LNG Chain



Marketing



Production & Transportation

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Liquefaction & Shipping

\$\$\$\$\$

Receiving Terminal

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- ✓ Integration is needed to face current risks and uncertainties of the changing gas markets.
- ✓ Algeria is offering opportunities to invest in the gas business in partnership with Sonatrach.
- ✓ Access to deregulated US market still to be secured even if the receiving terminal is by far the lowest investment of the LNG chain.
- ✓ Sonatrach is expanding its international gas activities in the downstream sector (receiving terminal, power generation..).



A key issue : To promote LNG Industry

Marketing

- ✓ **Develop supportive policies to stimulate LNG imports to the US**
- ✓ **Promote LNG terminals to diversify imports and provide security of supply of a clean fuel**
- ✓ **Speed up approval process for new terminals**
- ✓ **Create incentives to attract investment in new LNG chains**

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END

Thank you

